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THE NEW MATERIALISM

ONE of the most characteristic phenomena of the very disintegrated thought of our time is the recrudescence of materialism. From Büchner's or at any rate from Tyndal's day to the end of the nineteenth century materialism had suffered a fairly steady loss in the confidence of the thinking world, so that twenty years ago it seemed almost a dead issue in philosophy. Ernst Haeckel was indeed still faithful to the lost cause; but even he, before his death, gave it up in all its more extreme forms and went over to the "double aspect theory."[1] But the sick man of philosophy, as materialism might have been called a few years ago, has quite recently taken on a new lease of life and has found a new circle of able defenders.

The reason for the steady loss of credence which materialism suffered toward the close of the last century was, as I think will be generally acknowledged, not lack of interest in it nor any peculiarity of the psychological atmosphere of the times nor a change in intellectual taste, but just certain very definite logical considerations. The materialistic doctrine had never been perfectly clear of itself but wobbled between two forms, both of which had their very great logical difficulties. One form of materialism identified consciousness with matter or with brain energy, especially with motion; the other asserted that consciousness, while not identical with the brain or its activities, was always the result of these activities and never itself a determinant either of action or even of the later stages of its own series. Now as the nineteenth century grew older, the difficulties involved in both these doctrines became clearer until they seemed at last quite fatal. The first formulation of materialism indeed left consciousness efficient, but did so only by an identification which was clearly seen to be nonsense if such a thing as nonsense can be. We know what we mean by pains and pleasures, by thoughts and purposes and desires; we know also, in a general way at least, what we mean by brain cells and their real and possible motions; and if we do not and can not know that these are different it is hopeless that we should ever know anything. The difficulties involved in the second formulation of materialism are per-

[1] *Cf.* his *Gott-Natur*, Leipzig, 1914.

haps not so obvious, but to nearly all thinkers of twenty years ago they seemed none the less fatal. These difficulties cropped out in many forms, but all the more important ones were variations of the denial of efficiency to consciousness. For example, how shall the materialist explain the development of consciousness, having denied to it any influence upon the activities of the organism? James's formulation of this question in his famous chapter on the Automaton Theory has never been satisfactorily answered and seemed in itself very nearly decisive. Equally ominous for materialism was the bearing of the asserted inefficiency of consciousness on human reasoning processes. For materialism maintains (as obviously it must) that each thought is determined wholly by the preceding or accompanying brain states and not at all by the preceding thoughts. This being the case, what we commonly refer to as reasoned conclusions turn out not to be reasoned at all but simply caused by the entirely non-logical mechanical laws of brain activity. There can not, therefore, be any such thing as logical necessity in any of our reasoning processes. The perception of logical relations has nothing to do with them, nor has even the recognition of rational probability; they are determined solely by mechanical necessity. The materialist is plainly bound to maintain this. He is still bound to maintain it when asked how he knows his theory is true. To this question he can not reply that materialism is the logically necessary nor even the reasonably probable deduction from the facts, for the perception of logical connections has nothing to do with guiding man's conscious processes. All he can say is that the mechanical processes of his brain make him think as he does, but that as for proving the truth of his or of any other theory, that is a thing impossible for man.

Many other considerations of this sort might be pressed with cumulative effect, as was realized by our predecessors; and to them they appeared decisive. In short the assertion to which materialism is necessarily committed that all the purposeful and intelligent activities of the individual, the construction of civilization, of human literature, philosophy and science, the entire evolution of conscious beings, have been utterly unaffected by consciousness and are merely the result of the laws of matter—this assertion, once it was fully grasped, seemed too preposterous for serious consideration. Other theories of mind and body might have their difficulties; but greater difficulties than these were hardly conceivable.

One further reason for the nineteenth century's definite rejection of materialism was to be found in the fact that the great motive which had led to the popularizing of this doctrine,—namely the de-

sire to give naturalism full sway through all the world of matter and energy—was fully shared by parallelism; that parallelism, in fact, was even more favorable to naturalism than was materialism (in its second formulation), inasmuch as it retained the theory of the conservation of energy quite intact. For these reasons the great majority of the adherents of naturalism went over from materialism to parallelism. Toward the close of the century both materialism and interaction seemed to be definitively abandoned, and parallelism remained almost without rival in possession of the field.

If the rise of parallelism in the last half of the nineteenth century was in part the cause of the decline of materialism, the present recrudescence of materialism is due in no small degree to the notable decline in the popularity of parallelism. The fickleness of Fortune has seldom been more tragically illustrated than in the slump suffered by parallelism in the last few years. The causes of this slump are to be found in the fact that once fully understood parallelism is seen to have logical difficulties of its own so serious as to be fatal; but our interest in parallelism for the present is confined to the effect which its decline has had in initiating a revival of materialism. For the naturalistic philosophers who could not feel comfortable in the parallelist camp are now trooping back to their old haunts and reviving their ancient loyalty. Most of them, to be sure, are not as yet under the old flag nor do they use the old designation; the majority call themselves behaviorists or neo-realists or pragmatists—or idealists. There are a few, however, who are frank enough to hoist the old ensign and attempt a serious resuscitation of materialism as such. Among the leaders of this movement I shall mention only Professors Warren, Montague, and Sellars. Professor Strong should certainly be added to this list—provided one could be sure that he is really a materialist and not still in some sense a parallelist. If he belongs in the former category his materialism rests upon an identification of psychic states with material particles. This, so far as it goes, would of course be open to the same objections as the first form of the old materialism. Professor Strong seems at times to accept this identification and to seek to make it more thinkable by distinguishing between the psychical and the conscious. In addition to this distinction one must keep in mind Professor Strong's fundamental doctrine that introspection is always indirect and of the past. If one puts these considerations together it follows that we are never directly conscious of our psychic states and hence that they may, for aught we know, be identical with the brain. Yet I can not see that this

really avoids the old difficulty; for if psychic states are really psychic it is hard to put any meaning into the assertion that they *are* brain; and if they are not really psychic the cognizing of them must be, and the old difficulty will break out in a new place. Furthermore, it is exceedingly difficult for me, at least, to see how panpsychism (to which Professor Strong still clings) is to be made consistent with his critical realism, or to understand how a psychic state can be extended and possess *really* (not as mere appearance) the various primary qualities. If it is by considerations such as these that the ills of materialism are to be cured I fear the cure will prove worse than the disease. However, I am not at all sure that Professor Strong means this for materialism, for, as I have said, he still clings (with modifications) to the panpsychic doctrine of his former days; and the "brain" which we contemplate retrospectively when we introspect our (past) psychic states does not seem to be the same "brain" which an outsider might examine with eye and hand. I should not therefore feel justified in including him among the new materialists, although many passages in *The Origin of Consciousness* seem to indicate that he is one.

Nor is it strictly correct to classify Professor Warren as a materialist, for he still clings to the double-aspect theory of parallelism. Yet much of his writing on the mind-body problem[2] is in defense of the thesis that all man's activities are explicable on mechanical or (very likely) physico-chemical principles; so that in effect if not in name he is a defender of the new materialism. The form which this defensive argument assumes, however, is a little difficult to make out. It seems, taken in the large, to consist of two closely related parts. In the first place it maintains that even the most complex forms of thoughtful activity are built on the same general plan as ordinary ideo-motor action, and that, inasmuch as the latter can be fully explained mechanically, the highest forms of intelligent conduct need no further explanation. The other form of Professor Warren's argument consists in pointing us to a brain correlate for every type of conscious process, including even the most complicated and "intelligent."

As to the first of these arguments, it must be plain to all that the similarity between ideo-motor and "intelligently guided" action is accepted and demonstrable only so far as it is irrelevant to the present issue; and that when the similarity is depicted in such

2 "The Mental and the Physical," *Psy. Rev.*, March, 1914; "A Study of Purpose," this JOURNAL, Jan. and Feb., 1916; "The Mechanics of Intelligence," *Phil. Review*, Nov., 1917; "Mechanism *versus* Vitalism," *Phil. Review*, Nov., 1918.

terms as to make it relevant to the issue and decisive, the presentation of it as an actual fact begs the question. That there is a similarity of a very general sort between all forms of bodily activity, that they all have stimulus, central process, and response, will be denied by no one; but to assert in addition to this that increased neural complexity is the only other factor involved in deliberately guided voluntary action beside what one finds in automatic reaction is to start with the conclusion which was to be proved. Professor Warren seeks to make the transition from automatic to intelligent activity easier by using voluntary action in a purely perceptual situation as a middle term. In action of this sort the stimulus is an immediately perceived object to which we react, as we do in thoughtless ideo-motor action. On the other hand even highly complex and thoughtful activity such as chess-playing, which involves both invention and intelligent adjustment to new situations, is analogous to perceptual reaction. "An intelligent reaction based upon thought is essentially the same as the reaction to a perceived situation. The mental reconstruction is no different in character from the reconstruction of experience which is involved in a changing perceptual experience. . . . When one reacts to a *perceptual* stimulus one's motor activity is due to the fact that a certain physical collocation of particles exists and affects him; which means that his receptor apparatus is fitted to receive the impression of this collocation and that appropriate nervous pathways are established for reaction to such impressions. The same is true where the stimulus is a *thought*-complex; here one is reacting to certain *definite represented* physical collocations. Thought is merely an enlargement of the perceptual field. Intelligence means 'fit' reaction to environmental situations, whether perceived or pictured."[3]

Now while both complex intelligent activity such as chess-playing, and also ideo-motor action have doubtless certain things in common with intelligent reaction to a perceived situation, it is plain also that in certain things they differ from it. The opponent of materialism, who believes in the efficacy of consciousness, maintains that one of these differences lies exactly in this: that conscious thought aids to some extent in guiding intelligent perceptual behavior, and that conscious thought and conscious representations of merely possible situations which are never physically realized aid still more in guiding the higher forms of activity such as chess. Nor has Professor Warren said a single thing to disprove this view. As I read it, at any rate, his attempted reduction of intelligent activity to the type of ideo-motor action either reduces to a harmless

[3] "The Mechanics of Intelligence," p. 612.

pointing out of irrelevant similarities, or else reads into the comparison identities which he has done nothing to prove, and which can not be admitted in advance without begging the question.

Professor Warren, however, seems to make his position more persuasive by the aid of his second argument. He of course does not deny that certain "higher" and more complex intellectual processes are involved in such things as chess-playing than in mere ideo-motor action. But in all these the really efficient factor is the brain aspect of the psychical process. It is the "neural processes known introspectively as 'thoughts' of future situations"[4] which really govern the movement of the chess pieces. Similarly "satisfaction appears to be the subjective aspect of a neural condition stimulated by systematic processes which are autonomically induced."[5] "Conscious endeavor to deliberate is a [neural] *set* in some direction." "Purpose" must not be taken to mean a conscious desire for a consciously conceived achievement but must be interpreted in behavioristic, and ultimately in physiological terms.[6] When all conscious processes have been thus translated into neural terms, the explanation of the most complex human conduct in purely physico-chemical principles becomes relatively easy. "The complexity of the thought process means that a large number of neural connections within the brain are formed prior to each play. Intelligence means, in neural terms, that the less satisfying plays find no motor outgo—that only one out of many incipient reactions is completed."[7]

It would be unjust, I think, to accuse Professor Warren of begging the question in this argument. One might indeed justifiably do so if the argument be interpreted as an attempt to *prove* materialism. Plainly it *proves* materialism only on condition that we admit the neural interpretation of intelligence to be the sole proper interpretation; only if we start with the conclusion that intelligence as such has nothing to do with action. But as I understand Professor Warren, he does not mean to have his argument taken in so ambitious a sense. He wishes merely to show us what the materialistic hypothesis is, to show that it is possible to express human conduct in physico-chemical terms and that materialism is a perfectly statable view, even in face of such seemingly intelligent action as chess-playing.

If this is Professor Warren's point I think he has made it.

[4] "The Mechanics of Intelligence," p. 613.

[5] *Ibid.*, p. 618.

[6] "A Study of Purpose," *passim;* also "Mechanics *vs.* Vitalism," p. 611.

[7] "The Mechanics of Intelligence," p. 613.

Materialism is a perfectly statable hypothesis. The question still remains, Is it true? Is it or is the opposing hypothesis true? For as Professor Warren recognizes, the anti-materialistic view of intelligent activity is also perfectly statable. We have, in short, on our hands the two opposing hypotheses that we have always had, and the difficulties of each are exactly what they always were. The trouble with Professor Warren's type of materialism has always been that it denies the efficiency of consciousness and thereby gets itself into all the tangle of difficulties faintly suggested in the beginning of this paper. Nor can I see that Professor Warren has done anything to avoid or to diminish those difficulties. In fact he seems at times not even to realize what they are. At the close of his paper on "The Mechanics of Intelligence" he deals briefly with "the rôle of consciousness," and all he has to say as to the dangers which materialism runs in denying to consciousness all real efficiency is the following: "However much my actions may be determined mechanistically or unconsciously or subconsciously, it is my *conscious* experiences—by perceptions, feelings, imaginings and thoughts—that mean life to me. The proved value of consciousness is the subjective life which it furnishes to the mind." [8]

It is of course plain that this response does not even come in sight of the real difficulties involved in the denial of the efficiency of consciousness—difficulties which resulted in the almost universal rejection of materialism twenty years ago. My conclusion, therefore, is that, so far as Professor Warren's arguments are concerned, the new materialism is in no better case than the old, and that, like its predecessor, it demands of us an amount of credulity utterly unjustifiable by any considerations it has to offer.

No one, I imagine, sees more plainly the difficulties we have just been considering than Professor Montague. To him, as to most anti-materialists, the efficiency of consciousness is so obvious that it is futile to deny it. In fact his position has so much in common with interaction that I should hesitate in calling it materialistic if he did not name it so himself. But, in spite of his interactionist tendencies, it is plain that he chose the right name. In his attempt, then, to resuscitate materialism he takes quite a different tack from that of Professor Warren. He goes back namely to something like what I have called the first form of the older materialism which identified consciousness with brain energy. His improvement upon the older view consists in giving up the obviously absurd assertion that consciousness is the motion of brain molecules and suggesting instead that it may be some form of *potential* energy stored up in

[8] P. 620.

the brain, and presumably at the synapses. It was in this form that Professor Montague first expressed his hypothesis in his paper, "Are Mental Processes in Space?"[9] and in his contribution[10] to the *Essays Philosophical and Psychological in Honor of William James,* both published in 1908. The thought was carried farther, with certain epistemological modifications, in his essay on "Truth and Error" in the *New Realism* (1912), in which he identified consciousness with causality. More recently in his paper on "Variation, Heredity, and Consciousness"[11] he has proposed a new analysis of potential energy which in his opinion makes the identification of it with consciousness the more acceptable. According to this most recent suggestion, just as kinetic energy is motion, potential energy is rest. A mass may move, and it also may stick to the same spot. It may move fast and it may also stick fast. And as there are many degrees of the fastness with which a thing may move, so there may be many degrees of the fastness with which it may stick. For this new concept of relative immovability, or negative energy, Professor Montague proposes the new name *anergy.* His thesis now takes the form of asserting that the anergy present at the synapses of the brain is to be identified with consciousness. "When a vibration-wave proceeding over a sensory nerve is gradually brought to a stop by the resistance of the synapse, its energy is transformed from a visible kinetic form to an invisible and potential form. As its velocity passes through the zero-phase, its slowness passes through an infinity-phase. I ask you to entertain the suggestion that this *infinity-phase of slowness* is the common stuff of all sensations and that the critical points of zero and infinity through which the motion and slowness respectively pass afford the basis for that qualitative absoluteness and discontinuity that differentiate sensations from mere rates of change."[12]

Professor Montague has been at great pains to build up a new conception of potential energy and "anergy," and it is, I fear, a little unkind and unfriendly to assert that in all this he has done nothing to make the identification of consciousness with brain energy any easier. Nevertheless, that is the conclusion to which I am driven. It may perhaps be true that some of the difficulties which the imagination feels in identifying consciousness with moving molecules is avoided if instead we tuck it away quietly in the synapses where it may be out of sight, and make it less obtrusive to

[9] *Monist,* XVIII, pp. 21–29.

[10] "Consciousness as a Form of Energy."

[11] *Proceedings of the Aristotelian Society for 1920,* pp. 13–50.

[12] *Op. cit.,* p. 42.

the mind's eye by keeping it very quiet at many degrees of motionlessness. But in the last analysis it is really as impossible to put meaning into the assertion that *consciousness is rest* as into the assertion that it is motion. Once and for all, by our psychic states we mean one thing, and by the physical states of our brains we mean another; and it makes no difference whether these latter be interpreted as motion or as rest, as quantitative or qualitative, as kinetic or potential, as energy or anergy. I hasten to point out that Professor Montague foresaw just this criticism and has left no stone unturned to find an answer to it. In the first place he points out that his view of matter and of mind are very different from that of Descartes; that matter should be conceived as possessing the secondary as well as the primary qualities; and that "each man feels his consciousness to pervade not only his body but the outer space in which objects appear."[13] If the limits of this article permitted it would be possible to show that both of these assertions would be very hard to prove, and a theory which rested upon them would be in much the same predicament as that of a house built upon the sand. As to the latter assertion especially, one wonders whether in Professor Montague's opinion the potential energy in the synapses of my cortex, which is identical with my consciousness, also "pervades the outer space in which objects appear." It is not necessary for our present purposes, however, to go into these matters; for even if we present Professor Montague with all the secondary qualities he wishes for his material world and endow his consciousness (and also his cortex) with the magical power of pervading all space, the identification of thought with brain energy would still be as absurd as ever. All the secondary qualities and all the pervasion of space imaginable will not help us in the least to see how his thought of Julius Caesar can *be* a certain amount of anergy in his frontal or occipital lobes. Professor Montague argues that if we accept his non-Cartesian view of space and consciousness, "then the change of the kinetic energy of the stimulus into the potential energy of the sensation will not be a mysterious change of sheer quantity into quality."[14] This may be admitted, and the more willingly since it completely misses the point of the objection and still fails to put any meaning into the identification of consciousness with a "qualitative form of stress" in the brain synapses. Nor does it help matters to identify consciousness, as Professor Montague proposes to do, with the "higher phases of intensive energy."[15] Finally the series of analogies which are pointed out

[13] "Consciousness as a Form of Energy," p. 120.

[14] *Op. cit.*, p. 131.

[15] *Op. cit.*, pp. 131–132; "Are Mental Processes in Space?" pp. 27–28.

in several of Professor Montague's articles between potential energy and consciousness, while mildly interesting, are quite as unpersuasive and unimpressive as arguments from analogy usually prove. And even were they immensely more striking than they are they would do nothing toward overcoming the essential impossibility involved in the materialistic position. The hopelessness of the undertaking is seen even by materialists themselves—that is, by those who adhere to what I have called the second form of materialism. In Professor Warren's words, "If Professor Montague believes that potential energy is *another name* for consciousness—that the two are identical—his assumption seems like identifying visual surface with the mass which we lift." [16]

The identification of consciousness with energy and the denial of the efficiency of consciousness are the two horns of a dilemma which has in the past regularly proved fatal for materialism. Either one may be avoided but not both. The two defenders of the new materialism whom we have thus far considered chose different horns to be avoided. Each carefully evaded one of the horns, each deliberately took his chance with the other, and each, as I have tried to show, came to grief. The third and last advocate of the old faith whose position we shall examine is more wary than his colleagues. He knows the dangerous nature of both horns of the dilemma and means to be transfixed by neither. In two articles and in chapters of three books[17] Professor Sellars has sought to expound a view which (though indeed he does not himself explicitly call it materialism) is, in its defense of naturalism, essentially materialistic; and yet at the same time he insists that consciousness is neither to be identified with matter or brain energy,[18] nor to be robbed of its efficiency. "Consciousness is not extended after the manner of a physical thing for the very simple reason that it is not a physical thing." [19] "It is nonsense to say that the motion of atoms is consciousness." [20] The function of consciousness "is to aid in the bringing together of the parts [of a neural system] into a new integration by the cues it affords. Literally it assists the brain to solve problems." [21] "In deliberation we have a con-

[16] "The Mental and the Physical," *Psy. Review*, XXI, p. 83.

[17] *Critical Realism*, 1916 (Chapter IX); *The Essentials of Philosophy*, 1917 (Chapter XXII); "An Approach to the Mind Body Problem," *Phil. Rev.* for March, 1918; "Evolutionary Naturalism and the Mind Body Problem," *Monist* for October, 1920; *Evolutionary Naturalism*, 1922 (Chapter XIV).

[18] *Critical Realism*, p. 223–24.

[19] *Ibid.*, p. 244.

[20] *Essentials*, p. 260.

[21] "Approach to the Mind Body Problem," p. 158. See also pp. 157 and 159.

scious process of survey, selection and combination. Ideas are led to their consequences and judged by them. And our decision certainly takes the form of a plan which guides our behavior and without which our actions would be quite different."[22]

Professor Sellars believes that his doctrine is able to avoid the two great difficulties of the older materialism (which we have been discussing in this paper) and yet to maintain a strict naturalism; and that it can do this by means of two advances which thought has made in our century. One of these is a more adequate epistemology than was possessed by former defendants of materialism, the other a new view of the nature of matter and its varied "levels."

Critical realism, in contrast both to naïve realism, to neo-realism, and to idealism, identifies consciousness with the whole field of the individual's experience and at the same time insists upon the reality and the knowability of the physical. Consciousness is that which can be immediately experienced—or rather it *is* immediate experience; whereas the physical world is never directly intuited (as naïve realism believes) and yet (contrary to the assertion of idealism) it can be indirectly known.[23] This physical world, moreover, modern science seems to show, is not organized on simply one plan, nor subject to merely one set of laws. "If evolution is more than appearance, it surely implies a change in the mode of activity of parts of nature."[24] "It is no longer possible for a *fair* critic to identify naturalism with the mechanical view of the world."[25]

The new and true naturalism is, therefore, evolutionary naturalism. It must be remembered, however, that it is the material world that is evolving, and that the new laws of action on its higher levels are still the laws of the material world, nor can it be admitted by the defender of evolutionary naturalism that on any of these levels anything independent of the physical interferes with the regular physical activities. Anything like interaction between consciousness and the brain is strongly repudiated. The physical world is a closed system.[26] The laws of action of the lower material levels, moreover, are not abrogated. The new categories which apply to the new levels are continuous with the old ones and *must not con-*

[22] *Evolutionary Naturalism*, p. 312. See also pp. 311 and 313. *Cf.* also *Critical Realism*, 238, 249–50; "Evolutionary Naturalism" in the *Monist*, p. 590.

[23] *Critical Realism*, pp. 215–17, 247; "Approach," pp. 155–56. *Ex. Naturalism*, pp. 294–95, 303–05, 307, 310.

[24] *Crit. Realism*, 235.

[25] *Ev. Nat.*, p. 19. See also pp. 292, 297, 302, all of Chapter I; in fact the whole volume is devoted to this contention. See also "Approach," p. 159.

[26] *Ev. Nat.*, p. 314.

flict with them.[27] The old laws must be obeyed, the new ones being apparently additive merely.

The question must of course immediately present itself to every reader: Can this kind of modified naturalism be really compatible with the efficiency of consciousness? Professor Sellars thinks that it can be, if the true relation of consciousness to the brain be understood. "My thesis is that the living organism, *when properly and adequately conceived,* includes consciousness."[28] "When the cortex functions, consciousness forms part of the nature of the brain."[29] The brain has at least two "variants," one of them neural activity, the other conscious content. Consciousness is thus a "variant" of the brain.[30] "Psychical entities are not substances, but rather peculiar characteristics of neural wholes and inseparable from them."[31] "Consciousness is the brain become conscious."[32]

This identification of consciousness with the brain does not, in Professor Sellars's opinion, involve the logical inconsistencies of the older materialism; for "we do not mean that the same categories are applicable to the *physical as known by the physical sciences* and to consciousness." "As classes thought about by scientists, the physical and the psychical have contradictory attributes. This must not be confused with the question whether the physical as an existent can absorb consciousness."[33] In other words, Professor Sellars does not identify consciousness *as such* with brain substance or brain activity *as such;* but both consciousness and brain activity are variants of one organism. He simply means that "consciousness is not alien to the physical."[34] The brain thinks.

We may be able to go all this way with Professor Sellars and still be unable to see any real answer to the question how naturalism is to be made compatible with the efficiency of consciousness. Consciousness and the neural activity which controls our muscles and our conduct may well be two "variants" of the organism; but if this be proposed as an answer to our question, the old difficulty

[27] "Approach," p. 154.

[28] "Approach," p. 152.

[29] *Critical Realism,* p. 247. See also pp. 228–29, 231; *Ev. Nat.,* pp. 298, 308; *Essentials,* pp. 264–65.

[30] "When we call it a variant of the brain we imply that it is inseparable from the brain and penetrates it with right as a part of the reality of the brain." *Crit. Realism,* p. 244.

[31] *Ev. Nat.,* pp. 316 and 317.

[32] *Crit. Realism,* p. 245.

[33] *Ibid.,* pp. 228, 229.

[34] *Ibid.,* Chapter IX.

breaks out again in the further question, What is the relation of these two "variants" to each other? The answer proposed by parallelism, that they are two parallel aspects of one reality and that they run along with no mutual influence, Professor Sellars explicitly and repeatedly rejects;[35] and he is, naturally, even more determined in his opposition to interaction.[36] To be sure, "consciousness literally assists the brain to meet new situations,"[37] yet consciousness and the brain never interact. Interaction would imply, as Professor Sellars points out, some degree of independence on the part of consciousness, at least while it lasts; and such independence and interaction would be incompatible with naturalism. It is, indeed, hard to see how the denial of interaction can be compatible with the view that consciousness "literally assists the brain" and "guides behavior" so that without it "our actions would be quite different." One way out of the difficulty—and I confess the only one I can think of—is the way taken by Professor Montague, namely that of restoring efficacy to consciousness by making it a form of neural energy. Something like this view indeed Professor Sellars seems often to take. "Consciousness is existentially present to that part of the cortex which is functioning, and the brain's space is its space."[38] That is, it is *in* the brain, as light is in the diamond or electricity in the wire. "There is no valid reason to deny that consciousness is an extended manifold. It arises in and is effective in the physical world. Its unity is that of the integrative activity of the brain which it helps to direct. Hence it is as extended as the brain is."[39] That Professor Sellars at times seeks to solve the difficulty of the efficiency of consciousness through the identification of consciousness with the activity of the brain—an identification which at other times he emphatically denies—is made more evident through his explicit identification of the mind with the organization of the brain[40] and his occasional implicit identification of conscious processes with mental processes. Intelligent behavior is to be accounted for by nervous processes[41] since mind is a physical category. "Our view takes the sensorimotor process as a unit and holds that cortical integration of which consciousness is an element is always genetically continuous with a

[35] *Crit. Realism,* p. 246; *Essentials,* pp. 257–58; "Approach," p. 157; *Ev. Nat.,* pp. 289–95.

[36] *Essentials,* pp. 254–57; *Monist,* pp. 569–75; *Ev. Nat.,* 287–94.

[37] *Ev. Nat.,* p. 313.

[38] *Crit. Realism,* p. 244.

[39] *Ibid.,* p. 247. *Cf.* also pp. 245–49.

[40] *Ibid.,* pp. 252–53. *Ev. Nat.,* pp. 300–302, 315–16.

[41] *Ev. Nat.,* p. 300.

motor pattern of the brain. In other words, cortical integrations arise in one system with motor tracts."[42] "Psychical entities are peculiar characteristics of neural wholes and inseparable from them. . . . As soon as they are conceived as more than contents, as more than they themselves reveal, as soon as they are given *by themselves* power to do things, they become to the deceived thinker non-physical and alien to physical reality."[43] "The brain as mind is a more or less integrated system of propensities and interests which respond to the situation in which the individual is placed. And such interests must not be thought of as physiological in any sense that excludes discriminative appreciation. They are neurological systems whose urgencies are inclusive of mental contents. Consciousness must be connected psychophysically with neural processes of some reach. Attention itself can be understood only as a forward movement or passage in which the cerebral activity makes its path. What we must seek to do is to deepen our conception of the brain as at once activity and content. It is sensori-motor, ideo-motor; it is a stream of tendencies lit up by consciousness. The brain is synthetic because it is active. It is a more or less unitary process controlled by the neuronic system which is functionally uppermost."[44]

I can not say I am perfectly sure what these last quotations mean. But this at least is plain to me: that if they offer a method by which the universality of naturalism can be made compatible with the efficiency of consciousness, this method consists exactly in identifying the psychical with the physical. If this identification is not intended by Professor Sellars I can not understand either how he proposes to save the efficiency of consciousness or what it is he means by interpreting propensities, interests, discriminative appreciation and attention as neurological systems or forward movements of cerebral activity.

In other words, I can not see that Professor Sellars has done anything to help materialism out of its old dilemma of being forced either to identify consciousness with the brain or to deny its efficacy. Neither of the advances he has made over his predecessors of a former generation have really made the difficulty any less real. Critical realism is of course compatible with materialism; but it is equally compatible with interaction. Nor does the existence of "higher levels" of matter in the organic world give any real assistance. For even on these higher levels, we are told, nothing can

[42] *Ibid.*, p. 314.
[43] *Ev. Nat.*, p. 317.
[44] *Ibid.*, pp. 315–16.

conflict with the mechanical laws; and the new and higher laws of these levels are also of course still physical. Neither the old laws nor the new therefore can be interfered with or modified by consciousness (unless consciousness itself be physical) without wrecking naturalism and the whole materialistic scheme quite as disasterously as interaction ever threatened to do. Professor Sellars does not seem to realize that the ultimate difficulty of materialism lies not in the *kind* of physical laws which it sets in absolute control of mind and of human behavior, but in setting *any* physical laws in absolute control.

Other writers than those considered in this article might of course be added to the list of neo-materialists. But the three we have examined are typical in the sense that between them they seem to exhaust the possibilities. Professor Warren avoids the absurdity of identifying consciousness with brain but does so only by making consciousness inefficient and thereby committing himself to consequences that seem equally difficult of acceptance. Professor Montague clings to the efficiency of consciousness but only at the cost of calling consciousness a form of neural energy. Professor Sellars is unwilling to commit himself to either of these difficulties; and ends by falling a victim to both. My conclusion can only be that the new materialism has failed to bring forth a single consideration that makes the materialistic hypothesis really easier of acceptance than it was at the time when nearly every thinker gave it up, twenty years ago.

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REALISM WITHOUT MONISM OR DUALISM—II

A PREVIOUS paper discussed the nature of knowledge involving past events. The paper tried to show that the *object* of knowledge in such cases is a temporal sequence or continuum including past-present-future. While this analysis may be taken on its own merits or demerits, it was also indicated that its acceptance renders unnecessary the epistemological machinery of psychical states possessed of so-called transcendent capacity. Mr. Lovejoy's discussion in the *Essays in Critical Realism* considers, in addition, the case of anticipatory thought, judgments involving expectation, forecasts, prediction. He tries to show that in their case, at least, a mental state must be admitted, a representation which is psychical in its existence. He also questions the point in my own discussion (contained in the *Influence of Darwin, etc.*, in the essay on "The Experi-